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IN THE UTAH COURT OF APPEALS

THE UTAH CHAPTER OF THE SIERRA CLUB,	:	
Petitioner,	:	Case No. 20080113-CA
v.	:	
UTAH AIR QUALITY BOARD, and UTAH DIVISION OF AIR QUALITY,	:	
Respondents.	:	

AMICUS CURIAE BRIEF OF THE UTAH PHYSICIANS FOR A HEALTHY ENVIRONMENT (UPHE) IN SUPPORT OF PETITIONER SIERRA CLUB

A petition for review of formal adjudicative proceedings resulting in the denial of Utah Chapter of the Sierra Club's Request for Agency Action (as amended) by the Utah Air Quality Board.

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INTRODUCTION

The Utah Physicians for a Healthy Environment (UPHE) is an informal association of unpaid, volunteer physicians who in consultation with experts in the fields of epidemiology, biology, toxicology and engineering have developed some expertise in the effects of environmental degradation on public health, with an emphasis on air quality related health impacts. UPHE's expertise comes from direct patient care, research and by our evaluation of the medical literature. UPHE has no financial interest in the outcome of this Court's decision regarding the Sevier Power Plant.

I. UDAQ Failed to Provide Adequate Justification for Not Requiring Sevier Power Company to Meet the Most Stringent NOx BACT Limits Proposed or Required for Other Circulating Fluidized Bed ("CFB") Boilers

The UPHE supports the expert testimony of Ron Sahu. Mr. Sahu's contention that the technology approved by the Department of Air Quality ("DAQ") does not qualify as best available control technology ("BACT") and if the DAQ had actually required BACT then the NOx emissions would be only 20% of that from the Nevco plant. Over a 50 year lifetime for the plant that would amount to 51,036 less tons of NOx emitted into the atmosphere. Because mortality rates can be correlated with the volume of air pollution components it is possible to estimate that over the life time of this plant that the extra 51,036 tons of NOx could be expected to cause as many as 120 death.[1] NOx can be considered a "double

[1] *Premature Mortality from Proposed New Coal-fired Power Plants in Texas.* A research brief by the Public Citizen's Texas Office and Sustainable Energy and Economic

hazard". Year round it contributes to PM2.5 and in the summer it is an ozone precursor. The cost of the health care impacts of coal power plant emissions has been estimated to be as high as $300,000 per ton of particulate matter ("PM"), and $45,000 per ton of SO2. Using NOx as a surrogate for PM yields the conclusion that the economic loss to affected individuals from Nevco's refusal to use BACT technology will be literally in the billions of dollars.

The rationale behind this assessment emanates from the extensive research showing there is no safe level of any of the criteria air pollution components including particulate matter, ozone, NOx, or SOx. Even in an area where the background air pollution is low, and the amount of air pollution is considered small, there will still be measurable adverse health effects. This concept is well established by hundreds of medical studies, only a few of which will be cited below. While many of these studies focus on PM, the interplay in the atmosphere between particulate matter, SO2, and NOx make them relevant to the excess 51.036 tons of NOx mentioned above.

A well known and frequently cited study of the health effects of air pollution was conducted by the Harvard School of Public Health in six cities across the U.S. with varying degrees of air quality, which shows a direct relationship between PM and mortality rates.[2]

Development Coalition. Nov. 2006.

[2] The cleanest city was Portage, Wisconsin and the worst air quality at that time (the 1970's and early 80's) was in Steubenville, Ohio (The steel mills in Steubenville have since shut down with a marked improvement in their air quality.) Outdoor air pollution was measured at a central site in each community. They controlled for confounding variables including age and cigarette smoking. The adjusted mortality rate ratio was 1.26 comparing Portage to Steubenville. This means that you were 26% more likely to die over the study period if you lived in Steubenville, Ohio as compared to Portage,

In a study of the Wasatch Front in Utah it was found that the reason that the usual linear relationship seen in almost all studies of the health effects of air pollution was not noted in the Salt Lake City area was that on many days a significant percentage of the fine particulates in Salt Lake were windblown dust that consisted of crustal materials. When only fine particulates that were products of combustion such as is seen in the effluents from motor vehicles, power plants, wood burning fireplaces, etc. then the typical linear relationship was noted with increases in mortality of 0.8% per 10 ug/m^3 increase in PM_{10}.

This was similar to the mortality increases in Ogden (1.6%) and the Provo-Orem area(1.0%) for the same increase in fine particulates. (Pope et al. 1999. *Particulate Air Pollution and Daily Mortality on Utah's Wasatch Front.* Environmental Health Perspectives, Vol 107., pages 567-73.)

Luke and Clancy et al in a report in the respected British journal Lancet in 2002 (vol 360, Oct 19, 2002) found that when coal was banned in Dublin, Ireland there was a 70% reduction in particulate air pollution and this was associated with a decrease in respiratory and cardiovascular deaths by 15.5% and 10.3% respectively. This strongly suggests that the burning of coal is hazardous to human health. In a study of cardiopulmonary and cancer mortality it was found that for every 10 ug/m^3 increase in $PM_{2.5}$ there was a 4% increase in all cause mortality, a 6% increase in cardiopulmonary mortality and an 8% increase in cancer

Wisconsin. When all six cities were plotted on a graph it could be seen that there was a straight-line relationship between levels of fine particulates (PM_{10} at that time) and mortality. (Dockery et al. 1993. *An Association Between Air Pollution and Mortality in Six U.S. Cities.* New England Journal of Medicine, Vol 329, pages 1753-9.)

mortality. Other causes of death were not affected by air pollution. Again the relationship was linear and there was no totally safe value. (Pope et al. *Lung Cancer, Cardiopulmonary Mortality and long term exposure to Fine Particulate Air Pollution.* Journal of the American Medical Association 2002, Vol 287, pages 1132-41.)

In a recent study from the LDS Hospital in Salt Lake City Pope et al found that for every 10 ug/m^3 increase in $PM_{2.5}$ there was an increased risk of 4.5% in acute ischemic coronary events defined as unstable angina and myocardial infarction. Again we see a linear relationship without a threshold level below which the fine particulates do not cause cardiac events. (Pope et al. *Ischemic Heart Disease Events Triggered by Short-Term Exposure to Fine Particulate Air Pollution.* Circulation 2006. Vol 114, pages 2443-2448.) In a study of cardiovascular events in women the findings were even more striking. In this study there was a 24% increase in the risk of a cardiovascular event for each 10 ug/m^3 increase in $PM_{2.5}$. Also the risk of death increased by 76%. Cerebrovascular events were also associated with increases in fine particulates with a 35% increase for each 10 ug/m^3 increase in $PM_{2.5}$. (Miller et al. New England Journal of Medicine, 2007. Vol 356, pages 447-458.)

Studies of ozone show the same kind of linear relationship with health effects as has been repeatedly demonstrated with particulate matter, meaning there is also no safe level of ozone and virtually all increases in ozone levels will have corresponding adverse impacts including increased mortality rates. This was recently demonstrated by a study that collected data for

thirteen years on 40% of the entire US population.[3]

The finding that exposure to second hand smoke, as low as one cigarette a day, causes measurable increases in platelet activation, systemic inflammation and atherosclerosis[4] is evidence of how exquisitely sensitive the human body is to air pollution. These health impacts have also been demonstrated on young, healthy college age adults. Levels of all air pollution components typical of urban areas (PM 10, PM2.5 sulfates, nitrates and ozone) were all shown to be associated with increases in systemic inflammation, oxidative stress, blood coagulation, and autonomic dysfunction all of which are indices of arterial atherosclerosis .[5]

This medical data is unequivocal in demonstrating that whatever air pollution is allowed from the Nevco plant will be associated with adverse health impacts and those impacts will not be limited to residents in the immediate vicinity of the plant. By not requiring BACT the approval order would allow unnecessary and unacceptable health impacts to all residents of the surrounding area and those living downwind from the proposed facility.

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[3] Bell, et al. April 2006. *The Exposure-Response Curve for Ozone and Risk of Mortality and the Adequacy of Current Ozone Regulations*. Environmental Health Perspectives Vol. 114, Number 4.

[4] Penn, A., et al. 1994. *Inhalation of Steady–State Sidestream Smoke from One Cigarette Promotes Arteriosclerotic Plaque Development; Circulation*, 90. 1363-1367.

[5] Chuang, et al. 2007. *The Effect of Urban Air Pollution on Inflammation, Oxidative Stress, Coagulation, and Autonomic Dysfunction in Young Adults.* American Journal of Respiratory and Critical Care Medicine, Vol. 176. pp 370-376.

II. UDAQ Failed to Consider Sufficiently Activated Carbon Injection for Control of Mercury Emissions from Sevier Power Company Plant in its Maximum Achivable Control Technology ("MACT") Determination.

The technology used most effectively to achieve mercury control from municipal waste incinerators is Air Curtain Incinerators ("ACI"), which has been shown in some plants to achieve removal rates of more than 98%. Had Nevco been required to adopt Integrated Gasification Combined Cycle ("IGCC") technology the release of atmospheric mercury would be substantially less. Either technology would have resulted in several pounds less mercury being emitted into the atmosphere. The exact amount cannot be established because Nevco's proposed technology only uses incidental mercury capture making it unreliable and difficult to quantify.

Furthermore UPHE has found several different entries in the public record stating what the anticipated annual mercury emissions will be, including 8, 9, 40 and 80 lbs. The amount of mercury released depends significantly on the mercury content of the specific coal used and much less on the plant's mercury capture capability. It is very possible that not all the coal in the SUFCO mine is low in mercury and during the lifetime of this plant it is also likely that the coal may come from other sources with higher mercury content. We question whether any real enforcement measures would be taken if the Nevco plant's mercury emissions increase due to an increase in the mercury content of the coal substrate. For all of the above reasons we conclude that the estimates of the mercury emissions from the plant cannot be considered reliable. Whatever the mercury emissions are from the Nevco plant an

adverse impact on public health would be expected.

The most prominent public health consequence of environmental mercury contamination is neurotoxicity. However, mercury is only one of many heavy metals present in most coal substrates (some of the others are lead, cadmium, chromium, nickel and arsenic) all of which cause their own unique brand of toxicity and are known to have a synergistic effect with mercury. In most coals the amount of each of these other heavy metals is even more than mercury such that the total mass of heavy metals present in coal (and the corresponding adverse health impact) is many times the weight of mercury emissions. For example some coals average concentrations of lead greater than 1,000 times the amount of mercury, 40 to 50 ppm[6], compared to the SUFCO mine mercury concentration of 0.0391 ppm. This concept should be remembered throughout the remainder of our discussion of mercury toxicity.

The EPA considers mercury the most toxic component of air pollution. It is officially recognized as a "hazardous air pollutant" under the Clean Air Act. 42 U.S.C. §7412(b). The fact that the EPA has required municipal waste incinerators to install dedicated mercury capture for more than a decade even though their emissions are much less than from coal power plants is an additional defacto acknowledgment of mercury's toxicity. For coal plants to have avoided similar requirements from state and federal regulatory agencies is inconsistent, defies common sense and is indefensible.

[6]Fuel Processing Technology, 25 March 2005. Vol. 86, Issue 6, pages 731-734

In a year 2000 review of the health effects of mercury, the National Academy of Sciences Committee on the Toxicological Effects of Methyl Mercury found the evidence of the neurodevelopmental effects of methyl mercury "extensive." The panel stated, "Chronic, low-dose prenatal [methyl mercury] exposure from maternal consumption of fish has been associated with subtle end points of neurotoxicity in children. Those end points include poor performance on neurobehavioral tests, particularly on tests of attention, fine-motor function, language, visual-spatial abilities (e.g., drawing), and verbal memory." The panel concluded, "The population at highest risk is the children of women who consumed large amounts of fish and seafood during pregnancy. The committee concludes that the risk to that population is likely to be sufficient to result in an increase in the number of children who have to struggle to keep up in school and who might require remedial classes or special education."

In March 2001, the Centers for Disease Control and Prevention issued a report on mercury concluding that 10% of American women had mercury levels above the threshold that may put an unborn baby at risk for neurological impairment. These deficits are still evident at age seven and fourteen years, suggesting that the effect of mercury on the developing brain is irreversible. The central nervous system half life of some types of mercury that cross the blood brain barrier can be greater than twenty years.

Researchers from Johns Hopkins Medical School and the U.S. CDC drew blood mercury levels on mothers and children on the day of birth. One year later neurologic evaluations were done. Developmental problems in these one year olds correlated with significantly

elevated blood mercury levels found at birth. [Jedrychowski, 2006].

EPA scientists have estimated that one in six women of childbearing age in the U.S. have blood levels of methyl mercury that are sufficiently high to put 630,000 of the four million babies born each year at risk of learning disabilities, developmental delays, and problems with fine motor coordination, among other problems. These neurologic deficits may be subtle and not recognizable until the child is four years or older. This one in six number matches the alarming percentage of children now currently being diagnosed with learning disabilities or neurobehavioral disorders according to the CDC and American Academy of Pediatrics. This figure is a doubling of previous estimates based on increasing evidence that methyl mercury concentrates in the fetal blood becoming twice as high as blood levels in the mother. A mother may not have any symptoms and yet her child may be born with severe deficits.

While it cannot be concluded that mercury toxicity is responsible for the alarming epidemic of autism, it is appropriate to consider the evidence for a correlation even if it does not offer proof.

In the Health Place Journal, in 2006, University of Texas researchers published a paper on the correlation between mercury from Texas power plants and autism in Texas. Texas Education Dept. data was gathered from 1200 school districts on the rates of autism. This was compared with mercury release in each geographic area. "On average, for each 1,000 lb. of released mercury, there was a 61% increase in the rate of autism and a 43% increase

in the need for special education services."

It has recently been shown that testosterone potentiates the toxicity of mercury and that estrogen is protective. This correlates with the findings that boys are four times as likely as girls to have autism.

Dr. Stephanie Cave who runs an institute for the treatment of autism testified before Congress that, "it is rare that we find a child with development problems who does not have increased levels of mercury in the urine after chelation (a medical procedure designed to decrease tissue levels of heavy metals)." Reinforcing this observation it has been shown that children with autism have significantly lower levels of heavy metals in their hair samples which would be an indication that these children have trouble excreting these metals, resulting in a higher body burden and tissue levels.[7]

Ground breaking studies by several investigators, including a former FDA senior research scientist, Dr. Jill James, discovered that autistic children have a unique genetic deficiency in the production of glutathione which is the body's most important antioxidant and metals detoxifier.[8] A very small, non-toxic exposure for most children may result in full blown autism in these children. Any calculations by Nevco expert witnesses regarding the amount of mercury this plant will be responsible for in the average person will be irrelevant to the

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[7] Kern JK, 2007 April. J Toxicol Environ Health A.15:70(8):715-21

[8] James, J, "Metabolic biomarkers of increased oxidative stress and impaired methylation capacity in children with autism" American Journal of Clinical Nutrition.
James, J, Slikker, W. Jan 2005. *Thimerosal Neurotoxicity is Associated with Glutathione Depletion: Protection with Glutathione Precursors*, NeuroToxicology, Vol. 26.

potential toxicity experienced by this subset of genetically predisposed children.

The majority of human exposure to mercury is the result of consuming contaminated fish. Fish become contaminated through bioaccumulation which concentrates mercury in their tissues to levels up to 1 million times the levels of their surrounding environment. Mercury is the second most toxic natural substance on earth on a per weight basis after plutonium. All the aquatic life in a lake with a surface area of twenty five acres will be contaminated by 1/70 of a teaspoon. Mercury cannot be destroyed, cannot be combusted and it does not degrade. These factors help explain why small amounts of mercury steadily released into the environment can eventually result in concentrations sufficient to effect human health.

Human exposure can also result from inhaling mercury vapor in which case 80% of the mercury can bypass the lungs penetrating directly into the brain and central nervous system according the New York State Department of Environmental Conservation. Vaporization can occur from the warming of soil contaminated with mercury and is well known to occur during forest fires. Mercury vapor will be emitted from Nevco's proposed plant. Evidence of this delivery mechanism was published in April 2008 by the previously mentioned research team from the University of Texas where they found a direct correlation between autism rates among children and the proximity of their residence to a coal power plant.

The EPA estimates that 43% of total U.S. mercury deposition comes from U.S. coal power plants. Mercury has become ubiquitous in America's inland waterways. All of the fish samples that the EPA tested from the nation's lakes and rivers in the 1990s were

contaminated with mercury. The mean mercury concentration of the 520 fish sampled were twice the EPA's safe limit for women who eat fish twice a week. Forty-eight states now have advisories against eating fish caught in some of their waterways and lakes because of mercury contamination. Thirty-five states have those same warnings throughout the entire state. These warnings now cover 92% of U.S. Atlantic coastal waters and 100% of the Gulf Coast.

> Amplifying these advisories, the National Academy of Sciences warned that as little as one serving of a highly contaminated fish can expose a developing child to excessive levels of mercury and that such exposure can result in significant learning disabilities.

This depiction of nationwide mercury contamination does not address the issue of local "hot spots", or areas with high levels of mercury deposition. In regions where deposition is high, local and regional sources are the main cause of elevated mercury concentrations. A 2003 analysis of EPA data found that local sources can account for 50 to 80 percent of mercury deposition at hot spots. From the limited testing done in Utah it is apparent that Utah is a hot spot of mercury deposition.

In 2001, the USGS and Fish and Wildlife Service researchers studying the Great Salt Lake found alarmingly high levels of mercury in the water and in birds that feed on the lake's brine shrimp. Concentrations of methyl mercury, were some of the highest ever found in an inland waterway, and 25 times higher than the threshold for declaring fish unsafe to eat in the state of Florida.

Since testing of Utah lakes and rivers began in 2005 the UDEQ has issued several

rounds of advisories for elevated levels of mercury in trout. Nine Utah counties (Emery, Garfield. Uinta, Carbon, Iron, Grand, Washington, Wasatch, and Weber) have been affected. Testing in Lake Powell has shown mercury contamination of its fish. Limited mercury testing has been done in the Sevier River less than a mile from the proposed plant site. However, two of three brown trout tested had elevated mercury levels. The IPP power plant in Delta, less than sixty miles away from the Sevier Valley, is already a major contributor to mercury deposition in the area.

Utah has the unfortunate distinction of having the nation's only warnings against eating waterfowl because of mercury contamination. Testing for mercury contamination in the state of Utah is only at an early stage. However, the results so far suggest that in Utah the problem may already be wide spread.

Neurotoxicity in children is only one of many diseases known to be associated with mercury exposure. Others include coronary artery disease in men. Alzheimer's, obesity, ALS, asthma and other various forms of autoimmune diseases. Med Hypotheses. 2005;64(5):946-54

The fact that lead is emitted from coal combustion in amounts much larger than mercury and may act synergistically with mercury and other heavy metals should now be reintroduced to the discussion. Researchers at the University of Pittsburgh demonstrated that even extremely low levels of lead in children yield neurotoxic damage in the developing brain.[9]

[9] Needleman HL, Gatsonis CA. *Low-level lead exposure and the IQ of children: a meta-analysis of modern studies*. JAMA 1990;263:673-678. Bellinger DC. Needleman

The US Centers for Disease Control and Prevention declared in 2005 that no amount of lead is tolerable or safe in the bodies of children.[10] The Nevco plant will expose more Utah children to lead toxicity.

The extreme neurotoxicity of mercury and other heavy metals that exist as contaminants in coal have been recognized for decades for the impact they have on public health and childhood development in particular. Any regulatory policy that needlessly allows more contamination of the environment by these toxic heavy metals is indefensible. The relationship that mercury may have with autism calls to mind one of the guiding principles of medical practice which is: Whenever there is doubt, do for the patient whatever represents the least amount of risk. It is the philosophical foundation of preventive medicine. Mercury was recently removed from childhood vaccines not because it was proven to cause autism, but because of the possibility that it might. Certainly the least amount of risk to children is to prevent all possible exposure to heavy metals. It is appropriate and necessary preventive medicine.

National policies have been adopted to eliminate children's exposure to lead. Paint manufacturers were required to completely eliminate lead from paint, not reduce it. Mercury is even more toxic than lead. The DAQ's interpretation of BACT and MACT should reflect the need to eliminate all mercury emissions where possible, not just reduce them.

HL. Intellectual impairment and blood lead levels New Engl J Med. 2003:349:500-502.

[10] US Centers for Disease Control and Prevention. 2005. *Preventing Lead Poisoning in Young Children.* Atlanta, GA: Centers for Disease Control and Prevention.

As physicians we have only a limited ability to treat the damage of mercury exposure once it has occurred. The DAQ and now the AQB have the greater power to prevent the damage in the first place.

III. UDAQ Failed to Consider Adequately (IGCC) in its BACT Determination for Sevier Power Company Facility.

The UPHE wish to expand on the expected health benefits secondary to the issue raised by the expert witness John Thompson regarding the volume of post combustion sludge with an IGCC plant compared to the Nevco plant. BACT analysis requires an evaluation of environmental impacts including those from solid waste.

Nevco's plant is expected to generate thirty tons of coal combustion sludge every hour or 262,800 tons annually. Within this enormous volume of waste are fifty-five different toxic metals and compounds that cause profound adverse health impacts like impairment of neurological and physical development in children. We have discussed the heavy metal contaminants. We should now mention the radioactive metals uranium and thorium and their decay products radium, radon, and polonium.

The coal consumed by a typical 1000 megawatt plant will produce eighteen tons of radioactive compounds per year and much of it will remain in the post combustion residue. Americans living near coal plants are therefore exposed to more nuclear radiation than if they lived near a properly regulated nuclear plant.[11] The concentration of radioactive materials in coal average about 4.5 ppm or many times the concentration of

[11] Oakridge National Laboratory Review, July 1, 1993. Summer/Fall 1993 v. 26, n.3&4,

mercury. Some Utah coals have much higher radioactive contamination than the national average.

The EPA acknowledges that 24 of these 55 toxic substances are known or likely to be carcinogens and that children living and playing near coal sludge heaps have an increased incidence of cancer. In fact, a recent draft report from the EPA indicates that the cancer risk for adults and children drinking groundwater contaminated with arsenic from coal combustion waste dumps can be as high as one in one hundred or 10,000 times higher than the EPA's regulatory goals for reducing cancer risk.

By the EPA's own admission this assortment of toxic elements in coal ash has poisoned surface and groundwater supplies in at least twenty-three states. The agency also acknowledges that more cases of drinking water contamination are likely, but that monitoring systems are not in place to detect contamination at a large percentage of existing fly ash dumps.

With typical coal power plants, including CFB, better control of pollution at the smoke stack is offset by increased toxicity and volume of post combustion coal waste. Winds that scatter the fly ash heaps will disseminate more toxicity to the local community and the likelihood of groundwater contamination will be enhanced.

IGCC offers three advantages in this regard. 1. The volume of coal slag is 50% less. 2. The slag is vitrified and therefore less likely to leach out the contaminants. 3. The solid waste containing most of the mercury and other heavy metals is concentrated in an

extremely small fraction of the over all volume therefore offering many more cost efficient and efficacious managing options.

This proposed plant site is subject to periodic flooding from intense thunder storms and from spring run off during years of heavy snow pack. Local residents have observed two or three flooding episodes of that site in the last decade including seeing the site under three feet of water. If flooding occurred at the site of the sludge heap, the potential to breach any control measures or liners is obvious and the surrounding ground water, aquifers (many of which are within 40 ft of the surface), and even the Sevier River would be at substantial risk for contamination. The damage could be permanent and devastating to an agricultural community.

IV. UDAQ's Justification for Determining that the Proposed Plant Would Not Cause or Contribute to a Violation of the PM-10 National Ambient Air Quality Standards is Flawed.

The EPA notified the DAQ in the spring of 2003 that they would begin requiring three years of meteorological data to be submitted for power plant applications. They subsequently declared the date by which that requirement would commence as April 15, 2004, several months before the approval order by the DAQ in Oct. 2004. We believe that at some point prior to April 2004 Nevco was aware of the impending new rule and they should have demonstrated good faith and abided by it and that the DAQ should have required it.

UPHE asks the question, is the Sevier Valley truly an area of "attainment"? Is there any

monitoring data to support this claim? There is reason to believe Sevier Valley in fact may not be in attainment. The mean annual value of PM10 measured in the Sevier Valley by Nevco's subcontractor was twenty-nine. This is higher than the average annual value of PM10 for the Hawthorne station in Salt Lake City from 2001 to 2005, the last year data is accessible. Salt Lake County is not in attainment.

DAQ data from July and August 2006 shows simultaneous ozone measurements in Canyonlands National Park and Bountiful were very similar. Obviously Canyonlands is experiencing significant pollution from outside their air shed. Because of the industrial development in India and Asia, in particular the rapid expansion of the network of coal power plants in China in the last decade, world wide air pollution problems have intensified significantly since Nevco made the measurements for their application. It has been estimated that in fact three fourths of the particulate matter over the West Coast of California now originates in Asia. This is likely to have affected air quality in the Sevier Valley as well.

UPHE has reason to believe that if the preconstruction assessment of air quality in the Sevier Valley was updated with new measurements in 2007 or later that a more significant threat to public health would be identified. Requiring Nevco to update air quality and modeling data would therefore be an appropriate and beneficial safeguard to public health in accordance with the very mandate of the DAQ.

In the last 15 years medical science has revealed through hundreds of studies that the health impacts of air pollution are much more directly related to concentrations of PM2.5

than PM10 for chemical and physiologic reasons. Since 1997 the EPA has included PM2.5 as one of the criteria pollutants.

PM10 is often used as a surrogate for PM2.5. However, in circumstances of calm winds and inversions the percentage of PM2.5 in PM10 increases markedly and therefore is more of a public health threat. This is especially significant in the Sevier Valley which is geographically predisposed to winter temperature inversions just like the Salt Lake Valley. Thus, PM10 is not a reliable index of particulate matter health impacts especially in the Sevier Valley.

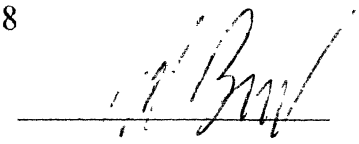
Finally, it is our understanding that in many states the approval agencies for coal power plants give significant weight to the outcomes of prior applications in other states. If the UDAQ sets the standard for BACT and MACT as low as was done in this case, it is less likely that proposed plants in other states will be held to a higher standard. With fourteen new coal power plants proposed for the Intermountain area, the overall adverse impact on the air quality and public health in Utah could indeed be staggering.

CONCLUSION

The idea that any and all reductions in emissions will protect public health is unequivocally supported in the medical literature by over 2,000 peer reviewed studies in the last ten years. State-of-the-art NOx controls, carbon injection for mercury capture, and the pollution reduction benefits of IGCC technology were not adequately considered in the permitting process. A more strict interpretation of BACT and MACT would yield significant,

broad based health benefits. UPHE urges this Court to require full analysis of these alternatives before approval of the proposed plant configuration.

DATED this 14th day of May, 2008



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CERTIFICATE OF SERVICE

I hereby certify that on this 14th day of May 2008, I caused a copy of the foregoing Amicus Curiae to be served on the following:

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